

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"6871204".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:14
L2	1	1 and (database with schema)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:21
L3	0	2 and hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:24
L4	1629	((metadata or "meta data" or "meta-data") with schema\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:41
L5	152	((xml or "extensible markup language") with document) same (hierarchical with database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L6	15	4 and 5	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:43
L7	905	((xml or "extensible markup language") with document) and (hierarchical with database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L8	15	4 and 6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L9	77	4 and 7	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53

EAST Search History

L10	43792	"707"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L11	57	9 and 10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:55
L12	31	11 and JAVA	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:56

	Document ID	Kind Codes	Source	Issue Date	Pages
1	US 20070011167 A1		US- PGPUB	20070111	12
2	US 20060212467 A1		US- PGPUB	20060921	11
3	US 20060167928 A1		US- PGPUB	20060727	26
4	US 20060026189 A1		US- PGPUB	20060202	24
5	US 20060005067 A1		US- PGPUB	20060105	22
6	US 20050273721 A1		US- PGPUB	20051208	13
7	US 20050228800 A1		US- PGPUB	20051013	25
8	US 20050160110 A1		US- PGPUB	20050721	25
9	US 20050160108 A1		US- PGPUB	20050721	21
10	US 20050021502 A1		US- PGPUB	20050127	16

	Title	Abstract
1	Optimization of queries on a repository based on constraints on how the data is stored in the repository	
2	Encoding of hierarchically organized data for efficient storage and processing	
3	Method for querying XML documents using a weighted navigational index	
4	Method and system for reconstruction of object model data in a relational database	
5	Systems, devices, and methods for generating and processing application test data	
6	Data transformation system	
7	Method and system for relationship building from XML	
8	Apparatus, system, and method for defining a metadata schema to facilitate passing data between an extensible markup language document and a hierarchical database	
9	Apparatus, system, and method for passing data between an extensible markup language document and a hierarchical database	
10	Data federation methods and system	

	Current OR	Current XRef	Retrieval Classif	Inventor
1	707/9	707/4		Krishnaprasad; Muralidhar et al.
2	707/101			Murthy; Ravi et al.
3	707/102			Chakraborty; Amit et al.
4	707/102			Djugash; Judy I. et al.
5	714/4			Llyod; Dennis JR.
6	715/762	707/1; 715/513; 715/526		Yantis, David Brook
7	707/100			Dettinger, Richard D. et al.
8	707/102	717/122		Charlet, Kyle Jeffrey et al.
9	707/101			Charlet, Kyle Jeffrey et al.
10	707/2			Chen, Benjamin et al.

	Document ID	Kind Codes	Source	Issue Date	Pages
11	US 20030140308 A1		US- PGPUB	20030724	102
12	US 7096224 B2		USPAT	20060822	32
13	US 6910029 B1		USPAT	20050621	8
14	US 20050160110 A		DERWENT	20050721	25
15	US 20050160108 A		DERWENT	20050721	21

	Title	Abstract
11	Mechanism for mapping XML schemas to object-relational database systems	
12	Mechanism for mapping XML schemas to object-relational database systems	
13	System for weighted indexing of hierarchical documents	
14	Metadata schema definition device for business to consumer communication, associates database schema and document schema to define metadata schema that allows data to be transferred between document and hierarchical database	
15	Article of manufacture comprising storage medium storing program to provide metadata schema comprising representation of structure of hierarchical database/extensible markup language document, database field name and XML element name	

	Current OR	Current XRef	Retrieval Classif	Inventor
11	715/500	707/100		Murthy; Ravi et al.
12	707/100	707/101; 707/102		Murthy; Ravi et al.
13	707/2	707/102; 707/3; 709/203; 709/219		Sundaresan; Neelakantan
14				CHARLET, K J et al.
15				CHARLET, K J et al.



US007146399B2

(12) **United States Patent**
Fox et al.

(10) **Patent No.:** **US 7,146,399 B2**
(45) Date of Patent: **Dec. 5, 2006**

(54) **RUN-TIME ARCHITECTURE FOR
 ENTERPRISE INTEGRATION WITH
 TRANSFORMATION GENERATION**

(75) **Inventors:** Joshua Fox, Emek Haela (IL); Ziv Z.
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 Schreiber, Jerusalem (IL); Tom Y.
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 Jerusalem (IL)

(73) **Assignee:** 2006 Trident Company, Westborough,
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(*) **Notice:** Subject to any disclaimer, the term of this
 patent is extended or adjusted under 35
 U.S.C. 154(b) by 337 days.

(21) **Appl. No.:** 10/104,785

(22) **Filed:** Mar. 22, 2002

(65) **Prior Publication Data**
 US 2003/0120665 A1 Jun. 26, 2003

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/053,045,
 filed on Jan. 15, 2002, which is a continuation-in-part
 of application No. 09/904,457, filed on Jul. 6, 2001,
 which is a continuation-in-part of application No.
 09/866,101, filed on May 25, 2001.

(51) **Int. Cl.**
G06F 15/16 (2006.01)

(52) **U.S. Cl.** 709/203; 707/100; 707/102;
 707/107; 709/219

(58) **Field of Classification Search** 709/226,
 709/227, 203, 200, 218, 206, 246, 219; 707/10.3,
 707/2, 102, 100, 107; 717/127, 118, 148;
 715/513, 500; 705/38

See application file for complete search history.

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VCC Utility; helpnet.ut.vccs.edu/ASC/Psoft/Advisories/
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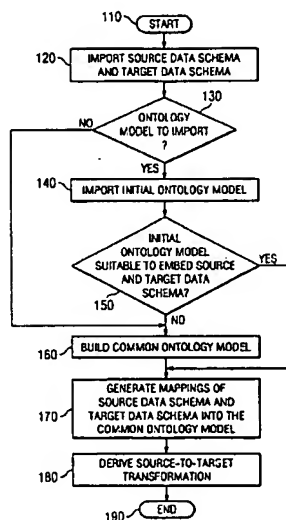
Primary Examiner—Thong Vu

(74) *Attorney, Agent, or Firm*—Duke W. Yee; Kama J.
 Nisewaner; Theodore D. Fay, III

(57) **ABSTRACT**

An enterprise application system including a run-time transformation server, and a message broker for routing and transforming data in the form of messages between a source application and a target application, including a plug-in for preparing requests to the run-time transformation server and for processing responses from the run-time transformation server. A method is also described and claimed.

24 Claims, 50 Drawing Sheets



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L7	905	((xml or "extensible markup language") with document) and (hierarchical with database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L8	15	4 and 6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:17
L9	77	4 and 7	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53

EAST Search History

L10	43792	"707"/\$.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:53
L11	57	9 and 10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:55
L12	31	11 and JAVA	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 15:56
L13	7186	(database with schema\$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:21
L14	499	(database with schema\$1) same ((xml or "extensible markup language") with document)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:27
L15	23	(database with schema\$1) same ((xml or "extensible markup language") with document) same (hierarchical with database)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:24
L16	11	(database with schema\$1) same ((xml or "extensible markup language") with document) same (hierarchical with database) and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:23
L17	339	(database with schema\$1) same ((xml or "extensible markup language") with document) and hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:28
L18	153	(database with schema\$1) same ((xml or "extensible markup language") with document) and hierarch\$6 and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:28
L19	153	(database with schema\$1) same ((xml or "extensible markup language") with document) and hierarch\$6 and java and schema	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:28

EAST Search History

L20	153	(database with schema\$1) same ((xml or "extensible markup language") with document) and hierarch\$6 and java and schema and document	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:29
L21	78	10 and 20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 16:29

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Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"20020078094".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:52
L2	0	1 and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:53
L3	2	"6871204".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:53
L4	0	3 and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:56
L5	0	3 and hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:58
L6	2	"20030101194".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:58
L7	1	6 and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 17:58
L8	2	"7096224".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:03
L9	1	8 and java	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:04

EAST Search History

L10	7186	database with schema	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:04
L11	76	(database with schema) same (java with class\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:05
L12	29	(database with schema) with (java with class\$2)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:05
L13	4	(database with schema) with (java with class\$2) same hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:07
L14	4	(database with schema) with (java with class\$2) same hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:07
L15	2	"6980995".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:07
L16	1	14 and 15	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:10
L17	0	16 and xml	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:08
L18	0	16 and markup	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 18:11

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	7186	database with schema	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 19:57
L2	378	(database with schema) same (XML with document with schema)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 19:58
L3	9	(database with schema) same (XML with document with schema) same (JAVA with class)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:00
L4	36	(database with schema) same (XML with document with schema) and (JAVA with class)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:23
L5	4	(database with schema) same (XML with document with schema) and (JAVA with class) and IMS	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:02
L6	26	(database with schema) same (XML with document with schema) and (JAVA with class) and hierarch\$6	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:02
L7	14	(database with schema) same (XML with document with schema) and (JAVA with class) and hierarch\$6 and (information with management)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:04
L8	20	(database with schema) same (XML with document with schema) and (JAVA with class) and hierarch\$6 and (database with management)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:13
L9	2	"6871204".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:13

EAST Search History

L10	0	9 and (java or jdbc)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/10 20:13
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